Space Weather Forecast

Issued on Wednesday 19 March 2025 at 13:11 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares. Chance of G1-G2/Minor-Moderate Storms Days 1-3 (19-21 March) due to coronal mass ejection arrivals.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with only Common-class flares observed in the past 24 hours. There are currently ten sunspot regions on the visible disc. Two regions, one in the northwest and the other near centre disc, are the two largest and more magnetically complex regions on the disc. Both have seen some growth of trailer and intermediate spots. None of the remaining spots are showing any significant magnetic complexity, are relatively small, and appear to be stable.

A filament eruption from the north-centre disc was observed around 19/0034 UTC, with analysis awaited as to whether there is any Earth-directed component from any subsequent Coronal Mass Ejection (CME).

Solar Wind / Geomagnetic Activity: Solar winds were at background to slightly elevated levels, ranging between 390-480km/s. Interplanetary Magnetic Field was weak to moderate, with the north-south component also weak to moderate, favouring a negative orientation. Geomagnetic activity was Quiet to Active (Kp2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with an ongoing chance of isolated Moderate flares.

Solar Wind / Geomagnetic Activity: There are three CMEs which feature in the forecast in the coming days (19-21 Mar). Solar winds are likely to remain mostly at slow to slightly elevated levels, with elevated enhancements possible due to forecast CME arrivals. Quiet to Unsettled activity expected initially, with a chance of G1-G2/Minor-Moderate storms Days 1-3 (19-21 Mar) should any of the three possible CMEs arrive and/or combine.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background levels, with a slight chance of enhancement from any larger

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flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	30	30	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	40	40	40
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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